

**FRIEDMAN & BRUYA, INC.****ENVIRONMENTAL CHEMISTS**

Date of Report: 08/12/09

Date Received: 08/11/09

Project: Alaskan Copper Works, F&amp;BI 908067

Date Analyzed: 08/11/09

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR pH  
USING EPA METHOD 9040C**Sample ID  
Laboratory IDpHCB330001  
908067-01

6.81

**FRIEDMAN & BRUYA, INC.****ENVIRONMENTAL CHEMISTS**

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**RESULTS FROM THE ANALYSIS OF WATER SAMPLES  
FOR TURBIDITY  
USING METHOD SM2130B  
Results Reported as NTU**

<u>Sample ID</u> Laboratory ID	<u>Date</u> <u>Sampled</u>	<u>Time</u> <u>Sampled</u>	<u>Turbidity</u>
CB330001 908067-01	08/11/09	11:00	29.6
Method Blank			<0.5

**FRIEDMAN & BRUYA, INC.****ENVIRONMENTAL CHEMISTS****Analysis For Total Metals By EPA Method 200.8**

Client ID: CB330001  
Date Received: 08/11/09  
Date Extracted: 08/11/09  
Date Analyzed: 08/11/09  
Matrix: Water  
Units: ug/L (ppb)

Client: Landau Associates  
Project: Alaskan Copper Works, F&BI 908067  
Lab ID: 908067-01  
Data File: 908067-01.055  
Instrument: ICPMS1  
Operator: btb

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	101	60	125
Holmium	111	60	125

Analyte:	Concentration ug/L (ppb)
Copper	209
Zinc	253
Lead	14.6

## FRIEDMAN &amp; BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

## Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Landau Associates
Date Received:	NA	Project:	Alaskan Copper Works, F&BI 908067
Date Extracted:	08/11/09	Lab ID:	I9-332 mb
Date Analyzed:	08/11/09	Data File:	I9-332 mb.046
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	btb

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	109	60	125
Holmium	110	60	125

Analyte:	Concentration ug/L (ppb)
Copper	<1
Zinc	<1
Lead	<1

**FRIEDMAN & BRUYA, INC.****ENVIRONMENTAL CHEMISTS****Date of Report: 08/12/09****Date Received: 08/11/09****Project: Alaskan Copper Works, F&BI 908067****QUALITY ASSURANCE RESULTS  
FROM THE ANALYSIS OF WATER SAMPLES  
FOR pH BY METHOD 9040C****Laboratory Code: 908068-02 (Duplicate)**

<b>Analyte</b>	<b>Sample Result</b>	<b>Duplicate Result</b>	<b>Relative Percent Difference</b>	<b>Acceptance Criteria</b>
pH	6.83	6.86	0	0-20

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**QUALITY ASSURANCE RESULTS  
FROM THE ANALYSIS OF WATER SAMPLES FOR TURBIDITY  
USING METHOD SM2130B**

Laboratory Code: 908061-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference	Acceptance Criteria
Turbidity	NTU	1.4	1.4	0	0-20

## FRIEDMAN &amp; BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

Date of Report: 08/12/09

Date Received: 08/11/09

Project: Alaskan Copper Works, F&amp;BI 908067

**QUALITY ASSURANCE RESULTS  
FOR THE ANALYSIS OF WATER SAMPLES  
FOR TOTAL METALS USING EPA METHOD 200.8**

Laboratory Code: 908055-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference	Acceptance Criteria
Copper	ug/L (ppb)	7.28	7.65	5	0-20
Zinc	ug/L (ppb)	16.3	14.8	10	0-20
Lead	ug/L (ppb)	2.39	2.35	2	0-20

Laboratory Code: 908055-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Copper	ug/L (ppb)	20	7.28	97 b	50-150
Zinc	ug/L (ppb)	50	16.3	99 b	50-150
Lead	ug/L (ppb)	10	2.39	101 b	50-150

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Copper	ug/L (ppb)	20	103	70-130
Zinc	ug/L (ppb)	50	126	70-130
Lead	ug/L (ppb)	10	104	70-130

## FRIEDMAN &amp; BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

**Data Qualifiers & Definitions**

- a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- A1 - More than one compound of similar molecule structure was identified with equal probability.
- b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca - The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.
- c - The presence of the analyte indicated may be due to carryover from previous sample injections.
- d - The sample was diluted. Detection limits may be raised due to dilution.
- ds - The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.
- dv - Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.
- fb - The analyte indicated was found in the method blank. The result should be considered an estimate.
- fc - The compound is a common laboratory and field contaminant.
- hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.
- ht - The sample was extracted outside of holding time. Results should be considered estimates.
- ip - Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.
- j - The result is below normal reporting limits. The value reported is an estimate.
- J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl - The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.
- jr - The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc - The presence of the compound indicated is likely due to laboratory contamination.
- L - The reported concentration was generated from a library search.
- nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc - The sample was received in a container not approved by the method. The value reported should be considered an estimate.
- pr - The sample was received with incorrect preservation. The value reported should be considered an estimate.
- ve - The value reported exceeded the calibration range established for the analyte. The reported concentration should be considered an estimate.
- vo - The value reported fell outside the control limits established for this analyte.
- x - The pattern of peaks present is not indicative of diesel.
- y - The pattern of peaks present is not indicative of motor oil.



**AQUATIC RESEARCH INCORPORATED**

**LABORATORY & CONSULTING SERVICES**  
3927 AURORA AVENUE NORTH, SEATTLE, WA 98103  
PHONE: (206) 632-2715 FAX: (206) 632-2417

<b>CASE FILE NUMBER:</b>	<b>FB1004-87</b>	<b>PAGE 1</b>
<b>REPORT DATE:</b>	<b>08/12/09</b>	
<b>DATE SAMPLED:</b>	<b>08/11/09</b>	<b>DATE RECEIVED: 08/11/09</b>
<b>FINAL REPORT, LABORATORY ANALYSIS OF SELECTED PARAMETERS ON WATER</b>		
<b>SAMPLES FROM FRIEDMAN &amp; BRUYA, INC. / PROJECT NO. 908067</b>		

**CASE NARRATIVE**

One water sample was received by the laboratory in good condition. Analysis was performed according to the chain of custody received with the sample. No difficulties were encountered in the preparation or analysis of this sample. Sample data follows while QA/QC data is contained on the following page.

**SAMPLE DATA**

SAMPLE ID	FOG (mg/l)	HARDNESS (mgCaCO3/l)	TSS (mg/l)
CB330001	3.96	32.4	23



# AQUATIC RESEARCH INCORPORATED

LABORATORY & CONSULTING SERVICES  
3927 AURORA AVENUE NORTH, SEATTLE, WA 98103  
PHONE: (206) 632-2715 FAX: (206) 632-2417

CASE FILE NUMBER:	FBI004-87	PAGE 2
REPORT DATE:	08/12/09	
DATE SAMPLED:	08/11/09	DATE RECEIVED: 08/11/09
FINAL REPORT, LABORATORY ANALYSIS OF SELECTED PARAMETERS ON WATER		
SAMPLES FROM FRIEDMAN & BRUYA, INC. / PROJECT NO. 908067		

## QA/QC DATA

QC PARAMETER	FOG (mg/l)	HARDNESS (mgCaCO <sub>3</sub> /l)	TSS (mg/l)
METHOD	EPA 1664	EPA 130.2	SM20 2540D
DATE ANALYZED	08/12/09	08/12/09	08/11/09
DETECTION LIMIT	2.00	2.00	0.50
DUPLICATE			
SAMPLE ID		BATCH	BATCH
ORIGINAL		21.9	56
DUPLICATE		22.9	60
RPD	NA	4.37%	6.90%
SPIKE SAMPLE			
SAMPLE ID		BATCH	
ORIGINAL		21.9	
SPIKED SAMPLE		41.6	
SPIKE ADDED		20.0	
% RECOVERY	NA	98.70%	NA
QC CHECK			
FOUND	8.50	38.3	9.2
TRUE	8.06	40.0	10
% RECOVERY	105.46%	95.77%	92.00%
BLANK	<2.00	<2.00	<0.50

RPD = RELATIVE PERCENT DIFFERENCE.

NA = NOT APPLICABLE OR NOT AVAILABLE.

NC = NOT CALCULATED DUE TO ONE OR MORE VALUES BEING BELOW THE DETECTION LIMIT.

OR = RECOVERY NOT CALCULABLE DUE TO SPIKE SAMPLE OUT OF RANGE OR SPIKE TO LOW RELATIVE TO SAMPLE CONCENTRATION.

SUBMITTED BY:

Steven Lazoff  
Laboratory Director

908067



**LANDAU  
ASSOCIATES**

- ☒ Seattle (Edmonds) (425) 778-0907  
☐ Tacoma (253) 926-2493  
☐ Spokane (509) 327-9737  
☐ Portland (Tigard) (503) 443-6010  
☐

ME 8/11/09 AI3

Date 3/11/09

Page 1 of 1

## Chain-of-Custody Record

[illegible]

**WHITE COPY - Project File**

**YELLOW COPY - Laboratory**

**PINK COPY - Client Representative**

Samples received at 7-6-40

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.  
Charlene Morrow, M.S.  
Yelena Aravkina, M.S.  
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Seattle, WA 98119-2029  
TEL: (206) 285-8282  
FAX: (206) 283-5044  
e-mail: fbi@isomedia.com

August 12, 2009

Joe Kalmar, Project Manager  
Landau Associates  
130 2<sup>nd</sup> Ave. S.  
Edmonds, WA 98020

Dear Mr. Kalmar:

Included are the results from the testing of material submitted on August 11, 2009 from the Alaskan Copper Works, F&BI 908067 project. There are 9 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl  
Project Manager

Enclosures

c: Gerry Thompson, Jeff Kray  
NAA0812R.DOC

FRIEDMAN & BRUYA, INC.ENVIRONMENTAL CHEMISTSCASE NARRATIVE

This case narrative encompasses samples received on August 11, 2009 by Friedman & Bruya, Inc. from the Landau Associates Alaskan Copper Works, F&BI 908067 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID

908067-01

Landau Associates

CB330001

The sample was sent to Aquatic Research for hardness, oil and grease, and TSS analyses. Review of the enclosed report indicates that all quality assurance was acceptable.

All quality control requirements were acceptable.